



Cronfa - Swansea University Open Access Repository

This is an author produced version of a paper published in :

Journal of Transport & Health

Cronfa URL for this paper:

<http://cronfa.swan.ac.uk/Record/cronfa20559>

Paper:

Musselwhite, C., Holland, C. & Walker, I. (in press). The role of transport and mobility in the health of older people.

Journal of Transport & Health

<http://dx.doi.org/10.1016%2Fj.jth.2015.02.001>

This article is brought to you by Swansea University. Any person downloading material is agreeing to abide by the terms of the repository licence. Authors are personally responsible for adhering to publisher restrictions or conditions. When uploading content they are required to comply with their publisher agreement and the SHERPA RoMEO database to judge whether or not it is copyright safe to add this version of the paper to this repository.

<http://www.swansea.ac.uk/iss/researchsupport/cronfa-support/>

The Role of Transport and Mobility in the Health of Older People

Editorial: Special Issue: Transport in Later Life, *Journal of Transport and Health*

Charles Musselwhite, Centre for Innovative Ageing, College of Human and Health Sciences, Swansea University, Swansea SA2 8PP, UK. c.b.a.musselwhite@swansea.ac.uk

Carol Holland, Aston Research Centre for Healthy Ageing, School of Life and Health Sciences, Aston University Birmingham B4 7ET, UK.

Ian Walker, Department of Psychology, University of Bath, Bath BA2 7AY, United Kingdom.

Abstract:

The world's population is ageing. Older people are healthier and more active than previous generations. Living in a hypermobile world, people want to stay connected to dispersed communities as they age. Staying connected to communities and social networks enables older people to contribute and connect with society and is associated with positive mental and physical health, facilitating independence and physical activity while reducing social isolation. Changes in physiology and cognition associated with later life mean longer journeys may have to be curtailed. A shift in focus is needed to fully explore older people, transport and health; a need to be multidisciplinary in approach and to embrace social sciences and arts and humanities. A need to embrace different types of mobilities is needed for a full understanding of ageing, transport and health, moving from literal or corporeal through virtual and potential to imaginative mobility, taking into account aspirations and emotions. Mobility in later life is more than a means of getting to destinations and includes more affective or emotive associations. Cycling and walking is facilitated not just by improving safety but through social and cultural norms. Car driving can be continued safely in later life if people make appropriate and informed decisions about when and how to stop driving; stringent testing of driver ability and skill has as yet had little effect on safety. Bus use facilitates physical activity and keeps people connected but there are concerns for the future of buses. The future of transport may be more community led and involve more sharing of transport modes.

Key words

ageing; health; wellbeing; transport; mobilities; older people

Ageing is a global phenomenon due to a combination of falling fertility rates and substantial increases in life expectancy (UN, 2013). In 1950, there were almost 385 million people aged over 60 across the world, representing only 8.6% of the global population; now there are just over 840 million people over 60, representing 11.7% of the population (UN, 2013). Projections suggest there will be 2 billion people aged over 60, representing 21.2% of the global population by 2050 (UN, 2013). Increases in ageing are happening across the world but the rate of increase is faster in wealthier countries. For example, the UK will reach 25% of the population being over 60 by around 2030 (ONS, 2013).

Not only will there be more older people, but there will also be changes in their health and wellbeing. Older people are more fit and active than previous generations. They have more aspirations, may still be working, have caring responsibilities (for other older people, for children or grandchildren, for example) and social and recreational networks that span over wide geographical distances. Ageing does not change the engagement people wish to have with a hypermobile society, wanting and needing to travel large distances, more frequently. Mackett (in this issue) neatly outlines the importance of keeping older people mobile, in terms of their contribution to society, including direct benefit of expenditure in shops, employment, voluntary work, childcare and taxation. He also notes that mobility provides intrinsic value too including facilitating independence and physical activity and reducing social isolation (Mackett, in this issue). He states the contribution to society will continue, if not increase, in the future, so long as mobility options are maximised for older people, for example increasing the numbers of buses, improving concessionary tickets for public transport use and the introduction of driverless cars. Research from Japan suggests that using motor vehicles and cycling allows people to travel further and this is linked with higher physical activity, increased social networks and better mental health (Tsunoda et al., in this issue).

At present, older people still report great difficulty in accessing shops, banks and hospitals and to stay connected to local communities, especially when no longer driving (see Musselwhite, 2011 for overview). The need to be mobile and to travel is also related to psychological wellbeing in old age. A reduction in mobility can result in an increase in isolation, loneliness and depression (Edwards et al., 2009; Fonda et al. 2001; Ling and Mannion, 1995; Windsor et al., 2007; Ziegler and Schwanen, 2012) and overall a poorer quality of life (Schlag, et al., 1996). Recent figures from Great Britain suggest around 342,000 over 75 year olds 'feel trapped' in their own homes through lack of suitable transport (WVRS, 2013).

It must be remembered that people do not suddenly become old: ageing is happening all the time to everyone. In addition, people's ageing process varies hugely for a variety of reasons; nevertheless much previous research tends to view older people as a homogenous group. It is therefore disappointing to find practices aimed at improving mobility in later life across Europe tend to focus solely on disability, showing grounding in a rather old-fashioned reductionist medical model (Marin-Lamellet and Haustein, in this issue). Marin-Lamellet and Haustein, interestingly, also note that such practices are targeted at improving the service for current users or improving how services are used by the user; hence non-users of a particular mode get less benefit. Thus, they do little at changing modal perceptions and are often aimed at improving mobility within specific modes or certain groups of people, making shifts from car to public, community or active modes of mobility difficult. There needs to be more interventions that help older people move between modes, to try out new modes and new destinations; in addition to supporting mobility, this supports a gradual process of

giving-up driving, potentially reducing its negative consequences. (Musselwhite and Shergold, 2013). Musselwhite (2010), for example, suggests training aimed at improving driver skills should also explain how to reduce driving and help older people choose different modes in order to aid people with driver cessation. Overall, there is an appeal here for a greater understanding of older people at the disaggregated level and hence associated changes in methodology and focus are needed. A need to understand the importance of mobility at a subjective level is every bit as, if not more important than, understanding it at an instrumental and purely functional level. Siren et al (in this issue) note the importance of mobility going beyond instrumental notions of travel, to include discretionary mobility in order to stay connected to community. Hence, travel solutions focussed primarily on utilitarian or instrumental needs will not suffice without building in additional understanding of the role of mobility in both maintaining independence and also of staying connected. Hence, as public health requires a shift in thinking from a medical to a more social model, so does transport studies, where a shift in thinking is needed from a traditional economic and engineering approach to one embracing a range of social science approaches and methods in order to understand complexities and diversities of older people.

An obvious relationship between health and transport is found in examining active travel. Continuing active travel in later life has direct physical health benefits. For example, regular walking or cycling can reduce cardiovascular disease by around 30% and reduce all-cause mortality by 20% through reducing the risk of coronary heart disease, stroke, cancer, obesity and type 2 diabetes (see Hamer and Chider, 2008, NICE, 2013; Sinnott et al., 2011;). It also keeps the musculoskeletal system healthy and promotes mental wellbeing (NICE, 2013). However, older adults lead more sedentary lifestyles than younger age groups and older women in particular are the most inactive segment of the population (Hall and McAuley 2010). Older people often feel excluded from the pedestrian environment because of poor design. Connectivity helps, having places to walk from and between, with quality connections in place. Walking is an important mode in later life for keeping older people connected (Stjernborg et al., 2014) and Chidyuk et al (in this issue) show that among older adults from lower socio-economic backgrounds, walking is higher than in the general population, and having places associated with food that are accessible locally, grocery stores, malls, cafes and restaurants to be precise, increases likelihood of walking among that group. Another important area Chidyuk et al note is that of walking speed where older people, on average, walk much slower than the 1.2m/s guidelines set out in many high income countries that affect the length of time signalled crossings allow for pedestrians, which concurs with previous research (Asher et al., 2012; Musselwhite, 2015; Newton and Ormerod, 2007). Fear of not being quick enough to cross the road is known to restrict people leaving the home or limit their accessibility when out and about (Lord et al., 2010; Zijlstra, 2007). Julien et al (in this issue) suggests that it is bus or transit use, above and beyond walking, that keeps people connected to their communities, to the public libraries, the malls, pubs, cafes, parks and physical activity centres . They do note of course that using buses keeps people walking to access the bus stops from origin and destination. This is further evidence to suggest free or concessionary bus fares and provision of good quality bus services being vital to health and wellbeing of older people. As outlined by Laverty (in this issue), free or concessionary bus use encourages physical activity and fosters a sense of belonging that underpins a vibrant community which older people contribute to, building on previous work by Green et al., (2014), Jones et al. (2013) and MacIntyre et al. (2008) among others.

Cycling is linked to fitness and health for older people and has less impact on hips and joints than other cardiovascular activity such as running. Cycling helps people stay connected to others (Tsunoda et al., in this issue). However, in America and the UK only 1% of all journeys by the over 65s are made by bicycle; compared with 9% in Germany, 15% in Denmark and 23% in the Netherlands. Much is noted about how this may be due to poor and lack of dedicated infrastructure for cycling at all ages, reducing habitual and normalisation of cycling through the lifecourse (Jones et al., 2014). Winters et al (in this issue) studied a bicycling area of Vancouver, where 3.2% of trips were made on bicycle by older people. They found similarly that a key barrier to cycling in later life was safety and the need for dedicated infrastructure was paramount. However, beyond this, there are also important aspects such as social and cultural norms that influence cycling take up. Along with Jones et al (2014), Winters et al (in this issue) research suggests the need for more lifecourse based approaches to understand the motivations for use of particular transport modes.

O'Hern and Oxley (in this issue) note how the car continues to be the prime mode of transport for older people in their study using data from Melbourne and regional areas of Victoria, Australia. This mimics data from many other high income countries, including those across America and Europe. It is therefore vital that older people are safe as drivers on the road. Data suggest that in most countries older people are relatively safe, especially up to the age of around 80 years (e.g. Mitchell, 2013). Some of the increase in the prevalence of the numbers killed or seriously injured is as a result of frailty; older people are more likely to be injured or killed if involved in a collision. There is also intriguing evidence that low mile drivers make up a significant proportion of the increase in deaths or seriously injured drivers found in later life (Langford et al., 2006). Siren and Haustein (in this issue) present data that shows licencing interventions, aimed at reducing unsafe drivers on the road, actually make very little difference to overall safety of older and other drivers. There is tentative evidence that vision tests and some cognitive tests may make a small improvement, but there is very little evidence for re-testing or medical screening as an intervention. Similarly there is little evidence that training provided for older drivers makes much difference to performance whether it is on or off road and more research is required to examine benefits (Korner-Bitensky, et al., 2009; McNamara et al., 2014). Functional, cognitive and visual impairments are precursors to driving cessation (MacLeod et al., 2014), yet older people with similar health issues seem to have very different trajectories to giving-up driving and how they engage with training, testing or licence withdrawal varies (see McNamara et al., 2014). Relying on self-regulation at the moment seems to work well, despite evidence suggesting people are not good at evaluating their own driving (e.g. Baldock et al., 2006; Holland, 2001; Musselwhite and Haddad, 2010; Musselwhite and Shergold, 2013; Rabbitt et al., 1996; Rabbitt and Parker, 2002). However, maybe this allows people to become over reliant on driving and adds to the difficulty in having to stop abruptly should health or other issues require them to do so, as it is known to be associated with poor self-reported wellbeing (Musselwhite and Shergold, 2013), and as such a move to a more multimodal presence earlier in life would be more beneficial.

So where is the research on mobility, health and wellbeing in later life heading? It is likely that we will see increased levels of private mobility among older people across the world. The next generation of older people to be, the 40-59 year olds in Western society, are currently heavy car users. Older people are likely to be working later on in life and to be having more active and more mobile lives in retirement when they do cease work. Working in later life will reduce the amount of self-regulation with regard to driving, which will perpetuate the need for maintaining safety for older

car drivers (and possibly for older lorry, van, bus and coach drivers too). The question of safety at the wheel and how to deal with it will therefore continue. Technological interventions are still heralded as having a key role here. Driver Assistance or even driverless cars have the potential to aid personal mobility for older people. They may also prolong driving or reduce the need to give-up driving all together. Shergold et al (in this issue) suggest technologies, not even directly related to travel modes, may change travel behaviour. This special issue has highlighted the importance of public transport (transit or buses). In Western society there is a real fear about the future of buses as they are currently run. Unviable services are being cut in the suburbs and rural areas and perhaps only key principal routes in towns and cities may remain. Perhaps community based schemes will have a greater role and take over some of these services for those who most need it. To gain a greater more holistic understanding of transport in later life, the future of research in this field could perhaps look beyond literal or corporeal mobility to include constructions of travel related to virtual, potential, imagined, aspirational and emotive mobilities (Parkhurst et al., 2014) utilising not just transport studies, health and geography but also sociology, gerontology and arts and humanities as well.

References

- Asher, L., M. Aresu, E. A. Falaschetti, and J. Mindell. 2012. Most Older Pedestrians Are Unable to Cross the Road in Time: A Cross-sectional Study. *Age and Ageing* 41: 690–694
- Baldock, M., Mathias J.L., McLeanb, A.J. and Berndt A. (2006). Self-regulation of driving and its relationship to driving ability among older adults, *Accident Analysis and Prevention*, 38: 1038– 1045.
- Chudyk, A.M., et al., (in this issue) Destinations matter: The association between where older adults live and their travel behavior. *Journal of Transport & Health* (2014), <http://dx.doi.org/10.1016/j.jth.2014.09.008i>
- Edwards, J. D., Perkins, M., Ross, L. A., & Reynolds, S. L. (2009). Driving status and three-year mortality among community-dwelling older adults. *Journal of Gerontology Series A: Biological Sciences and Medical Sciences*, 64 , 300–305.
- Fonda, S.J., Wallace, R.B. & Herzog, A.R. (2001). Changes in Driving Patterns and Worsening Depressive Symptoms Among Older Adults. *The Journal of Gerontology, Series B: Psychological Sciences and Social Sciences* 56(6), S343–S351.
- Green, J. ,Jones,A. ,Roberts,H. , 2014. More than A to B: the role of free bus travel for the mobility and wellbeing of older citizens in London. *Age.Soc.* 34 (03),472–494
- Hall, K.S., and McAuley, E. (2010) Individual, social environmental and physical environmental barriers to achieving 10 000 steps per day among older women. *Health Education Research*. 25, 478-488
- Hamer , M., and Chida. Y. (2008). Walking and Primary Prevention: A Meta-analysis of Prospective Cohort Studies. *British Journal of Sports Medicine* 42: 238–243.
- Holland, C. (2001). *Older Drivers: a Review*, London: Department for Transport

- Jones, A Goodman, A, Roberts, H, Steinbach, R & Green, J (2012) Entitlement to concessionary public transport and wellbeing: a qualitative study of young people and older citizens in London. *Social Science and Medicine* 91(0), 202–209.
- Jones, H., Chatterjee, K. and Gray, S. (2014) A biographical approach to studying individual change and continuity in walking and cycling over the life course. *Journal of Transport and Health*, 1 (3). pp. 182-189.
- Julien, D., et al., (in this issue), Transit use and walking as potential mediators of the association between accessibility to services and amenities and social participation among urban-dwelling older adults: Insights from the VoisiNuAge study, <http://dx.doi.org/10.1016/j.jth.2014.09.007i>
- Langford J., Methorst, R. and Hakamies-Blomqvist, L. (2006) Older drivers do not have a high crash risk—A replication of low mileage bias, *Accident Analysis & Prevention*, 38 (3) , 574-578
- Laverty and Millett, C. (in this issue) Potential impacts of subsidised bus travel for older people. *Journal of Transport & Health*
- Ling, D.J. & Mannion, R. (1995). *Enhanced Mobility and Quality of Life of Older People: Assessment of Economic and Social Benefits of Dial-a- Ride Services*. In Proceedings of the Seventh International Conference on Transport and Mobility for Older and Disabled People, Vol. 1, DETR, United Kingdom.
- Lord, S. E., M. Weatherall, and L. Rochester. (2010). Community Ambulation in Older Adults: Which Internal Characteristics Are Important? *Archives of Physical Medicine and Rehabilitation* 91: 378–383.
- MacIntyre, S., Macdonald, L., Ellaway, A. (2008) Do poorer people have poorer access to local resources and facilities? The distribution of local resources by area deprivation in Glasgow, Scotland. *Social Science & Medicine* 67 900–914
- Mackett, R., (in this issue) Improving accessibility for older people – Investing in a valuable asset. *Journal of Transport & Health* <http://dx.doi.org/10.1016/j.jth.2014.10.004i>
- Marin-Lamellet, C., Haustein, S., (in this issue), Managing the safe mobility of older road users: How to cope with their diversity? <http://dx.doi.org/10.1016/j.jth.2014.07.006i>
- MacLeod, K.E., Satariano W. A., Ragland, D.R. (2014). The impact of health problems on driving status among older adults *Journal of Transport & Health*, 1, 86–94
- McNamara, A., McCluskey, A., White, J., Geoghegan, S. (2014). The need for consistency and equity in driver education and assessment post-stroke *Journal of Transport & Health*, 1, 95–99
- Mitchell, C.G.B. (2013) The licensing and safety of older drivers in Britain. *Accident Analysis and Prevention*, 50, 732-741.
- Musselwhite, C.B.A. (2010). [The role of education and training in helping older people to travel after the cessation of driving](http://www.sciencedirect.com/science/article/pii/S2214140515000043) *International Journal of Education and Ageing* 1(2) , 197-212

- Musselwhite, C. (2011) [Successfully giving up driving for older people](#). Discussion Paper. International Longevity Centre - UK.
- Musselwhite, C.B.A. and Haddad, H. (2010). Exploring older drivers' perception of driving. *European Journal of Ageing*, 7(3), 181-188.
- Musselwhite, C. B. A., and I. Shergold. 2013. Examining the Process of Driving Cessation in Later Life. *European Journal of Ageing* **10** (2): 89–100.
- Newton, R., and M. Ormerod. 2007. "The Design of Streets with Older People in Mind." IDGO Design Guide. http://www.idgo.ac.uk/design_guidance/factsheets/Pedestrian_Crossings.htm
- NICE, 2013. Walking and Cycling: Local Measures to Promote Walking and Cycling as Forms of Travel or Recreation. NICE Public Health Guidance 41.
- O'Hern, S. and Oxley, J., (in this issue) Understanding travel patterns to support safe active transport for older adults. *Journal of Transport & Health* (2014), <http://dx.doi.org/10.1016/j.jth.2014.09.016i>
- ONS (Office of National Statistics) 2013. Population Statistics and Estimates by Area. Titchfield, Fareham: Office of National Statistics.
- Parkhurst, G., Galvin, K., Musselwhite, C., Phillips, J., Shergold, I., Todres L. (2014). [Beyond Transport: Understanding the Role of Mobilities in Connecting Rural Elders in Civic Society](#) in Hennessey, C., Means, R., Burholt, V., (Eds). [Countryside Connections: Older people, Community and Place in Rural Britain](#). Policy Press, Bristol.
- Rabbitt, P., Carmichael, A., Jones, S., and Holland, C. (1996). When and why older drivers give up driving. AA Foundation for Road Safety Research
- Rabbitt, P. & Parker D. (2002). The Ageing Driver: A Programme of Research, London: Department for Transport.
- Schlag, B., U. Schwenkhausen, and U. Trankle. 1996. "Transportation for the Elderly: Towards a User-Friendly Combination of Private and Public Transport." *IATSS Research* 20 (1).
- Shergold, I., et al. (in this issue), Future mobility in an ageing society – Where are we heading? *Journal of Transport & Health* (2014), <http://dx.doi.org/10.1016/j.jth.2014.10.005i>
- Siren, A., Haustein, S., (in this issue) Driving licences and medical screening in old age: Review of literature and European licensing policies <http://dx.doi.org/10.1016/j.jth.2014.09.003i>
- Siren, A., et al., (in this issue) Different types of out-of-home activities and well-being amongst urban residing old persons with mobility impediments. *Journal of Transport & Health* (2014), <http://dx.doi.org/10.1016/j.jth.2014.11.004i>
- Sinnett, D., Williams, K., Chatterjee, K. and Cavill, N. (2011) Making the case for investment in the walking environment: A review of the evidence. Technical Report. Living Streets, London.

Stjernborg V. , Melin Emilsson U., and Ståhl, A. (2014). Changes in outdoor mobility when becoming alone in the household in old age. *Journal of Transport & Health*, **1**, 9–16

Tsunoda, K., Kitano, N., Kai, Y., Tsuji, T., Soma, Y., Jindo, T., Yoon, J., and Okura, T. (in this issue). Transportation mode usage and physical, mental and social functions in older Japanese adults. *Journal of Transport & Health*.

UN (United Nations) (2013). *World Population Ageing 2013*. United Nations: New York.
<http://www.un.org/en/development/desa/population/publications/pdf/ageing/WorldPopulationAgeing2013.pdf>

Windsor, T. D., K. J. Anstey, P. Butterworth, M. A. Luszcz, and G. R. Andrews. 2007. “The Role of Perceived Control in Explaining Depressive Symptoms Associated with Driving Cessation in a Longitudinal Study.” *The Gerontologist* **47** 215–223.

Winters, M., et al., (in this issue) “I grew up on a bike”: Cycling and older adults, *Journal of Transport & Health* <http://dx.doi.org/10.1016/j.jth.2014.06.001>

WRVS (2013) Going nowhere fast: Impact of inaccessible public transport on wellbeing and social connectedness of older people in Great Britain
http://www.royalvoluntaryservice.org.uk/Uploads/Documents/Reports%20and%20Reviews/Trans%20report_GB_web_v1.pdf

Ziegler, F., Schwanen, T., (2011). ‘I like to go out to be energised by different people’: an exploratory analysis of mobility and wellbeing in later life. *Ageing and Society* **31** (5), 758–781.

Zijlstra, G. A. R., J. C. M. van Haastregt, J. Th. M. van Eijk, E. van Rossum, P. A. Stalenoef, and G. I. J. M. Kempen. (2007). “Prevalence and Correlates of Fear of Falling, and Associated Avoidance of Activity in the General Population of Community-living Older People.” *Age and Ageing* **36** (3): 304–309.